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ABSTRACT

This guide outlines the basic, developmental, and extension skills that should be covered in practical arts courses (for grades 7 and 8) presented within the framework of agricultural, business, home economics, and industrial arts/technology education programs. The first section lists practical arts skills related to the following areas of agricultural education: agricultural careers; country living; techniques of handling horses; procedures involved in managing beef cattle, dairy cattle, swine, sheep and goats, and poultry; techniques for caring for small animals, bees, and earthworms; methods of growing field crops and small grain; horticulture; forest management, the Future Farmers of America; mechanical drawing; methods of working with cold metal and wood; small power tools; electricity; and painting techniques. The section on business education covers keyboarding, computers and business applications, business machines and reprographics, and business communications. Practical arts skills in the section on home economics relate to child care, clothing and textiles, foods and nutrition, the Future Homemakers of America, resource management, and personal management and relationships. The final section, which deals with industrial arts/technology education, lists skills in the areas of communications systems, drafting, graphic arts, photography, construction materials, preconstruction planning, building structures, manufacturing materials, manufacturing processes, production techniques, transportation, energy, power, and power systems. (MN)

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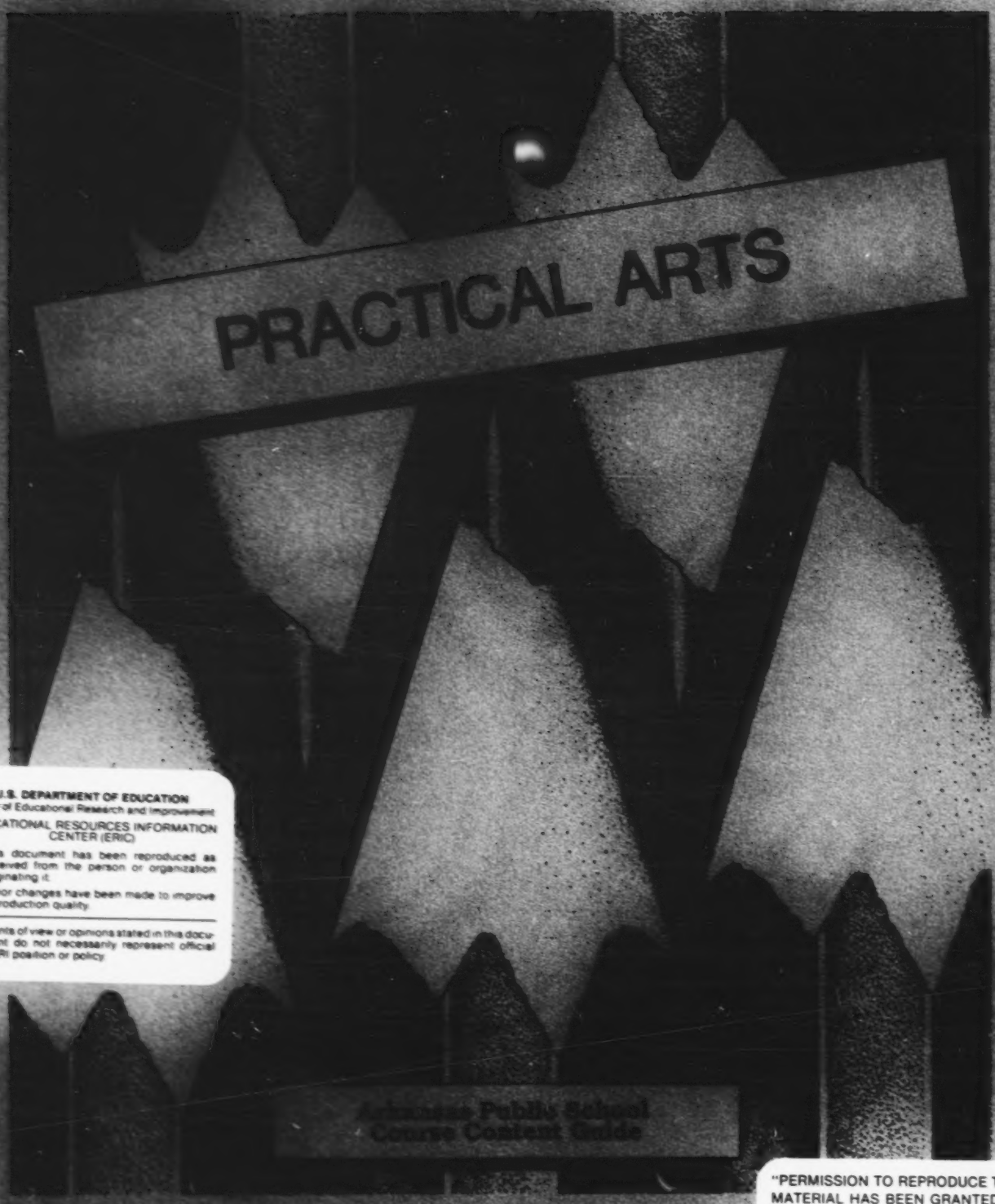

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INTRODUCTION

The STANDARDS FOR ACCREDITATION OF PUBLIC SCHOOLS, adopted by the Arkansas State Board of Education, required the development of these course content guides. The Standards also required that essential skills be identified for each course taught in the public schools of Arkansas. Committees of classroom teachers, curriculum specialists, principals, superintendents, staff members from institutions of higher education and Department of Education personnel jointly identified the skills included in each of the guides.

These guides are offered as a framework on which a curriculum can be built; they should not be considered the complete (only) curriculum of a school. After adopting the guides and after careful planning, the local staff should extend them by developing teaching plans, identifying resources, selecting presentation methods and coordinating evaluative techniques with skills to be taught. From these expansions of the course content guides, a more complete curriculum guide can emerge.

Within each subject area and at each grade level, skills have been identified at three instructional levels: basic, developmental and extensions. The basic skills are those skills which all students must master. They are also the skills on which the Minimum Performance Test items are based. A comprehensive guide should exceed minimum levels of expectation. Developmental skills and extensions are also included.

Extensions are suggested for those learners who have mastered the required basic and recommended developmental skills. Extensions stress the higher order thinking, processing and problem solving skills. These extensions suggest ways for the teacher to broaden student learning on grade level without introducing more basic skills from subsequent grade levels.

The nature of some subject areas requires sequencing of skills. In those subject areas, skills are sequenced by grade level. Sequencing in some subject areas is left to the discretion of the school district and teachers.

The Student Assessment/Minimum Performance testing program coordinates with the statement of basic skills in the course content guides. The Minimum Performance Test measures mastery of basic skills. Promotion from the eighth grade will depend upon mastery of the basic skills listed in the five course content guides for reading, mathematics, language arts, science and social studies.

No curriculum should be considered static. Updating of the guides should be a continuous process. Responses from educators will help determine when revision is needed.

The Department and the State Board of Education recognize the outstanding work of those professional educators who have contributed to the development of these guides. Without their help, this work could not have been accomplished.

CONTENTS

Instruction in practical arts may be taken in grades 7 or 8. Course content is designed for a minimum of nine weeks, one semester or two semesters. There is no prerequisite for any of the practical arts courses. Courses of less than one semester will not be approved for vocational add-ons by the Division of Vocational and Technical Education.

Agriculture Education

The Agriculture Education section of the Practical Arts Guide is designed to introduce seventh or eighth grade students to several agriculture careers or agriculture related careers. This course will also provide an opportunity to experience learning by hands-on in a shop rotation. Selected sections may be offered for a nine-week course, a semester course, or a full-year course.

Business Education

The Business Education section of this Practical Arts Guide is a one-semester course designed to introduce students to specific Business Education courses. This section may be divided into two nine-week courses. The majority of time is spent in developing keyboarding skills. In addition, the areas of computers, business machines, reprographics and business communications are explored.

Home Economics Education

The Home Economics section of this Practical Arts Guide is a one-semester course designed to assist seventh and eighth grade students with the development of practical skills in the five major areas of Home Economics. Although not recommended, selected sections may be offered for a nine-week course.

Industrial Arts/Technology Education

The Industrial Arts/Technology Education section of this Guide is designed to give students in seventh or eighth grade exploration experiences in four major clusters; communication, construction, manufacturing and transportation. The local school district may select any one of the four clusters for a nine-week course, any two clusters for a semester course or all four clusters for a full-year course.

Agricultural Education

PRACTICAL ARTS

INTRODUCTION: This nine week mini course in the Practical Arts of Vocational Agriculture will introduce to seventh or eighth grade students several agricultural careers and an opportunity to experience learning by doing in a shop rotation.

AGRICULTURE CAREERS

Basic Skills

1. List five agricultural careers in your area.
2. List the first step in choosing a career.

Developmental Skills

1. Name the eighteen occupations in agriculture.
2. List the value of vocational agriculture to your occupation.

Extension Skills

1. Gather information on an occupation.

COUNTRY LIVING

Basic Skills

1. List three groups of people who live in rural areas.
2. List three advantages of country living.

Developmental Skills

1. Compare advantages and disadvantages of country living.

Extension Skills

1. List 15 different questions to be answered before buying or renting a farm, ranch or other country property.

HANDLING HORSES

Basic Skills

1. Tell how much it will cost you to own and keep a horse.
2. List the principal uses of horses.

Developmental Skills

1. Identify the parts of a horse.
2. List six guidelines for feeding horses.

Extension Skills

1. List guidelines for breeding horses.
2. List categories of factors to be considered in keeping horses healthy.

MANAGING BEEF CATTLE

Basic Skills

1. List the three major areas in which you can have a career in the beef industry.
2. Tell what three questions must be answered before choosing a breed to raise.

Developmental Skills

1. Describe some of the characteristics of the common beef breeds.
2. List important points to consider in choosing an animal for your beef herd.

Extension Skills

1. List guidelines for managing a cow and calf operation.
2. List guidelines to follow in finishing feeder cattle.

MANAGING DAIRY CATTLE

Basic Skills

1. List reasons and value of dairy production in your area.
2. Name parts of USA with large number of dairy cattle.

Developmental Skills

1. Name the parts of a dairy cow.
2. Describe the feeding of a dairy cow.

Extension Skills

1. Calculate nutrient requirements for dairy cattle.

MANAGING SWINE

Basic Skills

1. List types of swine production.
2. List guidelines for selection of swine.

Developmental Skills

1. Identify parts of a hog.
2. Outline guidelines to follow when raising and managing swine.

Extension Skills

1. State practices to follow in developing a sanitation system for hogs.

MANAGING SHEEP AND GOATS

Basic Skills

1. List uses of sheep and goats.
2. List type of range needed for sheep and goat production.

Developmental Skills

1. Name some breeds of sheep and goats.
2. Identify parts of sheep and goats.

Extension Skills

1. State essential guidelines to follow when managing a sheep flock and a goat herd.

MANAGING POULTRY

Basic Skills

1. List some birds considered to be in the poultry industry.
2. Name the primary use of poultry in your area.

Developmental Skills

1. List five items needed in broiler, turkey, and egg marketing contracts.
2. List guidelines for brooding and rearing turkeys.

Extension Skills

1. Explain how to encourage quail, pheasants, and other upland wild fowl to nest on crop land, pasture land, range land, and wood land.

CARING FOR SMALL ANIMALS, BEES AND EARTHWORMS

Basic Skills

1. List some small animals.
2. List guidelines for beginners in the honeybee industry.
3. List feed and equipment needed for production of earthworms.

Developmental Skills

1. Give procedure to follow in caring for both dogs and cats.
2. List equipment needed to raise honeybees.
3. List management quidelines to follow in rearing rabbits.
4. List three systems used in rearing earthworms.

Extension Skills

1. List at least six pests that bother honeybees.

GROWING FIELD CROPS

Basic Skills

1. Name the types of field crops in your area.
2. List in order the field crops based on dollar value of production.

Developmental Skills

1. List uses of field crops produced in your area.
2. List the primary method of harvesting each field crop.

Extension Skills

1. List steps in the production of three major field crops in your area.

GROWING SMALL GRAIN

Basic Skills

1. List the major small grains in your area.
2. List the major use of each small grain.

Developmental Skills

1. List major markets for each small grain.
2. List steps needed to produce small grain.

Extension Skills

1. Give the controlling methods of major insects that attack small grains.

HORTICULTURE

Basic Skills

1. List the two major classes of vegetables grown.
2. List some nursery crops grown in the USA.

Developmental Skills

1. Tell how to prepare the soil for vegetable crops.
2. Name the best weed control for vegetable crops.

Extension Skills

1. Develop a garden plan.

MANAGING FORESTS

Basic Skills

1. Define a forest.
2. Name some uses of forest products.

Developmental Skills

1. Describe the value of a forest in your area.
2. List terms used in managing a forest.

Extension Skills

1. Explain the fertilization of a forest.
2. Outline ways a forest landowner may improve his forest.

FUTURE FARMERS OF AMERICA ACTIVITIES

Basic Skills

1. List several activities of the FFA.
2. List requirements for membership in the FFA.

Developmental Skills

1. Discuss SOEP.
2. Develop a plan for a SOEP.

Extension Skills

1. List degrees in the FFA.
2. List awards available to the FFA member.

MECHANICAL DRAWING

Basic Skills

1. Identify the following drafting equipment:
   a. Drawing board
   b. T square
   c. Architects scale
   d. 45 - 90 and 30 - 60 degree triangles
2. Attach paper to drawing board
3. Make three sets of guidelines
4. Make three lines of lettering, student's name, school and address.

Developmental Skills

1. Draw 30 and 60 degree angular lines.
2. Draw to scale - front, top, end view of a project.

Extension Skills

1. Reproduce a drawing at another scale.

TOOL SHARPENING

Basic Skills

1. Identify the following tool sharpening equipment:
   a. Bench grinder
   b. Bench grinder tool rest
   c. Grinding rock
   d. Tool guage
   e. Oil stone
   f. Flat file
   g. Round file
   h. Taper or three corner file
2. Sharpen a knife.
3. Sharpen a lawnmower blade.

Developmental Skills

1. Sharpen a screwdriver.
2. Sharpen a plane blade.
3. Sharpen a cold chisel.

Extension Skills

1. Sharpen a twist drill.
2. Sharpen a hand saw.

COLD METAL

Basic Skills

1. Identify the following cold metal equipment:
   a. Metal working vise
   b. Cold chisel
   c. Awl
   d. Ball pein hammer
   e. Hacksaw
   f. Hand drill
2. Cut steel rod with cold chisel.
3. Cut flat steel stock with cold chisel.
4. Cut flat steel stock with hacksaw.
5. File surface square with flat file.
6. Drill hole in flat steel stock.

Developmental Skills

1. Make eye in flat stock.
2. Rivet steel stock with pop rivet gun.
3. Cut threads on a steel rod.

Extension Skills

1. Cut thread inside a 3/8" hole.

WOODWORKING

Basic Skills

1. Identify the following woodworking equipment:
   a. Woodworking vise
   b. Hammer (claw)
   c. Handsaw
   d. Compass saw
   e. Standard screwdriver
   f. Phillips screwdriver
   g. Try square
   h. Nail set
2. Nail ten 8d common nails.
3. Remove nail with hammer and wooden block.
4. Set a wood screw with standard screwdriver.
5. Mark and saw a board square.

Developmental Skills

1. Cut a 4" hole with a compass saw.
2. Cut a 45 degree angle on a board.

Extension Skills

1. Cut a chamfer on a board.
2. Cut a 1/4" dado.

SMALL POWER TOOLS

Basic Skills

1. Identify the following parts of an electric drill:
   a. Chuck
   b. Chuck key
   c. RPM
2. Attach and drill holes with an electric drill.
3. Identify the following parts of a sabre saw:
   a. On/Off switch
   b. Guide plate
   c. Blade
   d. Blade set screw
   e. On/Off, Forward/Reverse switch
4. Cut a pattern with a sabre saw.

Developmental Skills

1. Cut a board at a 45° angle.
2. Cut holes at an angle.

Extension Skills

1. Cut a 2" hole with an electric drill.
2. Cut a 4" hole with a sabre saw.

ELECTRICITY

Basic Skills

1. Identify the following electrical equipment:
   a. Lineman pliers
   b. Electrician pliers
   c. Needle-nose pliers
   d. Wire guage
   e. Conduit bender
   f. Steel wool
2. Make a Western Union or end splice.
3. Attach a cord cap and lamp to a cord.

Developmental Skills

1. Connect a single pole switch controlling a light.
2. Make a romex cable splice.

Extension Skills

1. Draw electrical circuits of home.
2. Connect a two, three-way and four-way switch to control light in three places.

PAINTING

Basic Skills

1. Identify the following painting supplies:
   a. Brushes
   b. Rollers
   c. Latex paint
   d. Varnish
   e. Cleaning agent
2. Prepare a board for finish.
3. Apply three coats of paint to a board.
4. Demonstrate proper paint brush care.

Developmental Skills

1. Apply first coat of paint to metal.
2. Remove old finish from a project.

Extension Skills

1. Apply paint with a spray gun.

Business Education

PRACTICAL ARTS

Grade Level: 7,8 Prerequisites: None

The Business Education section of this Practical Arts Guide is a one-semester course designed to introduce students to specific Business Education courses. This section may be divided into two nine-week courses. The majority of time is spent in developing keyboarding skills. In addition, the areas of computers, business machines, reprographics and business communications are explored.

KEYBOARDING

Basic Skills

1.1 Prepare machine and work area.
1.2 Demonstrate proper keyboarding posture.
1.3 Identify parts of machine used to insert paper correctly.
1.4 Insert and remove paper.
1.5 Identify home row keys.
1.6 Demonstrate correct fingering for the alphabetical, numerical, and symbol keys using the touch method.
1.7 Operate basic service keys.
1.8 Demonstrate setting left and right margins.
1.9 Type words using proper keystroking techniques.
1.10 Compute gross words a minute on a one-minute timed writing.
1.11 Space properly after punctuation marks.
1.12 Space correctly before and after symbols.
1.13 Demonstrate proper care of the typewriter.
1.14 Compute margin settings for various line lengths using different pitches.
1.15 Type sentences and paragraphs using proper keyboarding techniques.

Developmental Skills

1.25 Type from handwritten and rough-draft copy using proofreaders' marks.
1.26 Compute gross words a minute on two- and three-minute timed writings.
1.27 Demonstrate speed and accuracy progress.

Extension Skills

1.75 Use word processing equipment.
1.76 Follow directions through the use of prepared audio media.
1.77 Create and/or participate in typewriting games.
1.78 Center, horizontally, words and lines.
1.79 Center tables horizontally and vertically.
1.80 Key in block-format business letters.
1.81 Differentiate between block and modified block style.
1.82 Differentiate between open and mixed punctuation.

1.83 Address small envelopes.
1.84 Address large envelopes in OCR format.
1.85 Apply use of proofreaders' marks.
1.86 Reproduce unbound manuscript.
1.87 Reproduce left-bound manuscript.
1.88 Reproduce a short report.

COMPUTERS AND BUSINESS APPLICATIONS.

Basic Skills

2.1 Demonstrate correct fingering for the alphabetical, numerical, and symbol keys using the touch method.
2.2 Demonstrate use of the special function keys on the keyboard.
2.3 Demonstrate proper care and handling of equipment.
2.4 Perform appropriate power-on and power-off procedures.
2.5 Perform system commands necessary to store, retrieve, and execute programs and obtain a directory or catalog.
2.6 Operate a printer, load paper, and print data.
2.7 Proofread, correct errors, and make editorial changes in data presented on video display.
2.8 Save, update, and retrieve data.
2.9 Identify various forms of auxiliary storage.
2.10 Load and store programs to auxiliary storage.
2.11 Identify software programs commonly used in business applications.
2.12 Describe how electronic computer technology has influenced business, science, government, education, and enhanced individual lives.
2.13 Describe career opportunities involving computers in business.

Developmental Skills

2.25 Discuss the importance of protecting data files and information with integrity and confidentiality.

Extension Skills

2.75 Enter manuscript information using a word processing package.
2.76 Move data from one place to another.
2.77 Enter business documents.
2.78 Produce mailable names from a mailing list.
2.79 Load a commercial software program.
2.80 Save, edit, and print a document.

BUSINESS MACHINES AND REPROGRAPHICS

Basic Skills

3.1 Match terms related to electronic calculators.
3.2 Match the key to its symbol.
3.3 Use the touch method for addition and subtraction.
3.4 List the types of copiers and duplicating equipment most commonly used in business.
3.5 Reproduce a copy on a copying machine.
3.6 Explain how to collate several copies of a multi-page report.

Developmental Skills

3.25 Reproduce an FLBA chapter meeting agenda.

BUSINESS COMMUNICATIONS

Basic Skills

4.1 Explain the importance of effective communication.

4.2 Define communication terms such as: transmission, generate, originate, terminate, verbal skills, interaction, body language, good will, vendor.

4.3 Define computer language terms such as: communicating computer, microcomputer, minicomputer, program, software, compatability.

Developmental Skills

4.25 Give an oral presentation using correct introduction techniques.

4.26 Identify the kinds and levels of communication skills needed for successful business careers.

4.27 Describe situations involving miscommunications.

4.28 Define information processing, telecommunications, and networking in relation to communications.

4.29 Describe the impact that computer technology has made on the individual's role as a communicator.

Extension Skills

4.75 Search local newspapers for articles that cite language barriers or misinterpretations as the cause of a problem.

4.76 Study advertisements appearing in local newspapers and indicate some of the out-of-town businesses that must communicate with residents or businesses at the local level.

4.77 Determine the impact that computers have on personal lives.

4.78 Locate an article on microcomputers and summarize the contents.

4.79 Visit a local business or industry that uses word processing equipment and describe the equipment in use and the purposes for which it is use.

Home Economics

PRACTICAL ARTS

CARING FOR CHILDREN

10 Periods

Basic Skills

1. Name basic child-care procedures.
2. List safety precautions for caregivers and children.
3. List the major responsibilities of a caregiver and a parent in babysitting situations.

Developmental Skills

1. Select appropriate play materials for children.
2. Distinguish between child care and child guidance.
3. Discuss ethics for a person providing child care.
4. List some emergency situations that may arise when caring for children and list possible responses.
5. Discuss babysitting etiquette.
6. Describe how to obtain a babysitting job.

Extension Skills

1. Evaluate preparation needed for a babysitting job.

CLOTHING AND TEXTILES

15 Periods

Basic Skills

1. List points to consider in clothing selection.
2. List tips for proper clothing care.
3. Identify and use basic sewing and pressing equipment correctly.
4. Demonstrate the ability to thread a machine and bobbin correctly.

Developmental Skills

1. Interpret the meaning of care labels.
2. Construct a simple project.
3. Exhibit proper hand-sewing techniques.
4. Evaluate the appearance and workmanship of a sewing project.

Extension Skills

1. Use accessories to update clothing.
2. Report on current fashion techniques.
3. Demonstrate basic mending techniques.

FOODS AND NUTRITION

15 Periods

Basic Skills

1. Define the basic food groups and give daily requirements for teenagers.
2. Identify proper measuring techniques.
3. Define basic terms used in food preparation.
4. Identify basic kitchen equipment.
5. Interpret abbreviations used in recipes.

Developmental Skills

1. Identify safety hazards in the kitchen area.
2. Apply sanitary procedures in food preparation.
3. Select foods for a well-balanced meal.
4. Demonstrate basic table-setting techinques.
5. Prepare simple foods (snacks).

Extension Skills

1. Demonstrate the use and care of selected kitchen appliances.
2. Serve and eat prepared foods in a socially acceptable manner.
3. Record energy-saving practices in the kitchen area.
4. Practice menu planning/food selection for a well-balanced meal.

FUTURE HOMEMAKERS OF AMERICA

5 Periods

Basic Skills

1. Describe the relationship between the Future Homemakers of America organization and the home economics curriculum.
2. Describe the symbols of the organization.
3. List periodicals of the Future Homemakers of America.
4. Name the colors of the organization.

Developmental Skills

1. Discuss the history, motto, creed, and purposes of Future Homemakers of America.
2. Describe the need for parliamentary procedure.

Extension Skills

1. Recite the Future Homemakers of America creed.
2. Demonstrate the use of parliamentary procedure in a simulated chapter meeting.
3. Explore personal growth achievement activities.

RESOURCE MANAGEMENT

10 Periods

Basic Skills

1. Define terms involved with resource management.
2. Discuss ways personal living space can meet individual needs.
3. Recognize steps involved in making a spending plan.
4. Recognize reasons for good money management.

Developmental Skills

1. Prepare a personal spending plan.
2. Make a plan for sharing space cooperatively in the home.
3. Demonstrate the ability to perform simple household tasks.

Extension Skills

1. Apply comparative shopping techniques for selected personal items.

PERSONAL MANAGEMENT SKILLS/RELATIONSHIPS

20 Periods

Basic Skills

1. Define self-concept.
2. Define communication.
3. List factors which influence priorities.
4. List steps in the decision-making process.
5. Discuss physical, social, and emotional changes that occur during adolescence.
6. Discuss principles of good grooming.
7. Describe signs of good physical and mental health.
8. Discuss peers and peer pressure.

Developmental Skills

1. Identify ways to build a positive self-concept.
2. List ways to improve communication within families.
3. Name factors that affect personal decision making.
4. Discuss methods of coping with change.
5. Give examples of good health habits.
6. Rate personal grooming.
7. Discuss ways of coping with peer pressure.
8. Describe problems associated with substance abuse.

Extension Skills

1. Develop a plan for personality improvement.
2. Demonstrate good communication techniques.
3. Practice the decision-making process with a personal problem.
4. Discuss ways to develop positive peer pressure.
5. Develop a personal grooming plan.
6. Discuss ways to avoid use/abuse of substances such as cigarettes and alcohol.

Industrial Arts/Technology Education

PRACTICAL ARTS

At the Junior High level, learning experiences in Industrial Arts/Technology Education should be directed toward exploration in four major clusters: communications, construction, manufacturing, and transportation. Each school will have the option to select any one of the four clusters for a nine week course, any two for a semester course or all four for a full year course. The Industrial Arts/Technology Education program is designed for grades 7 or 8.

COMMUNICATIONS

COMMUNICATION SYSTEMS

Basic Skills

1. Define "communications."
2. Explain the types of communication.
3. Explain the ways in which people communicate with each other.
4. Explain the ways in which people communicate with machines.

Developmental Skills

1. Demonstrate a communication model using:
   a. Information
   b. Source
   c. Channel
   d. Receiver

Extension Skills

1. Compare and contrast ways in which people communicate with each other and with machines.
2. Apply the communication model to drafting, graphic arts and photography.
3. Explain the impact which modern technology has on communication systems.
4. Explain the technological impact which modern communication systems have on our society.

DRAFTING

Basic Skills

1. Define relative drafting vocabulary.
2. Explain the common drafting tools and their use.
3. Apply the alphabet of lines to a drawing.

4. Compare the following types of drawings:
   a. Orthographic
   b. Oblique
   c. Isometric
   d. Perspective
5. Distinguish between careers related to drafting.
6. Identify common hazards related to drafting.
7. Discuss rules and procedures that will minimize dangers in the drafting profession.

Developmental Skills

1. Demonstrate proper use and care of common drafting tools.
2. Construct and label the alphabet of lines.
3. Construct drawings of simple three-dimensional objects.

Extension Skills

1. Construct working drawings with shape description and size description.
2. Explain the technological impact which drafting has on modern society.
3. Explain the impact which modern technology has on drafting.

GRAPHIC ARTS (Printing)

Basic Skills

1. Define vocabulary related to graphic arts.
2. Explain the basic tools and processes of graphic arts (i.e., design, layout, paste-up, etc.).
3. Compare the basic kinds of image transfer (i.e., letterpress, duplication, screen, lithography).
4. Explain the materials in graphic arts and their use.
5. Explain common methods of binding.
6. Distinguish between the careers related to graphic arts.
7. Identify common hazards associated with graphic arts.
8. Discuss rules and procedures that will minimize dangers in graphic arts work.

Developmental Skills

1. Prepare an original layout.
2. Duplicate an original layout.
3. Use a common method of binding.

Extension Skills

1. Prepare and print a product using one of the following: letterpress, screen and lithography.
2. Prepare and print a multi-page product.
3. Discuss the technological impact of graphic arts on modern society.

PHOTOGRAPHY

Basic Skills

1. Identify and define the vocabulary related to photography.
2. Compare and contrast the basic types of cameras.
3. Explain the uses for the basic lab equipment.
4. Describe the basic photographic processes.
5. Explain the relationship of the basic parts of an adjustable camera.
6. Report on careers related to photography.
7. Identify common hazards associated with photography.
8. Discuss rules and procedures that will minimize dangers associated with photography.

Industrial Arts/Technology Education

PRACTICAL ARTS

At the Junior High level, learning experiences in Industrial Arts/Technology Education should be directed toward exploration in four major clusters: communications, construction, manufacturing, and transportation. Each school will have the option to select any one of the four clusters for a nine week course, any two for a semester course or all four for a full year course. The Industrial Arts/Technology Education program is designed for grades 7 or 8.

COMMUNICATIONS

COMMUNICATION SYSTEMS

Basic Skills

1. Define "communications."
2. Explain the types of communication.
3. Explain the ways in which people communicate with each other.
4. Explain the ways in which people communicate with machines.

Developmental Skills

1. Demonstrate a communication model using:
   a. Information
   b. Source
   c. Channel
   d. Receiver

Extension Skills

1. Compare and contrast ways in which people communicate with each other and with machines.
2. Apply the communication model to drafting, graphic arts and photography.
3. Explain the impact which modern technology has on communication systems.
4. Explain the technological impact which modern communication systems have on our society.

DRAFTING

Basic Skills

1. Define relative drafting vocabulary.
2. Explain the common drafting tools and their use.
3. Apply the alphabet of lines to a drawing.

4. Compare the following types of drawings:
   a. Orthographic
   b. Oblique
   c. Isometric
   d. Perspective
5. Distinguish between careers related to drafting.
6. Identify common hazards related to drafting.
7. Discuss rules and procedures that will minimize dangers in the drafting profession.

Developmental Skills

1. Demonstrate proper use and care of common drafting tools.
2. Construct and label the alphabet of lines.
3. Construct drawings of simple three-dimensional objects.

Extension Skills

1. Construct working drawings with shape description and size description.
2. Explain the technological impact which drafting has on modern society.
3. Explain the impact which modern technology has on drafting.

GRAPHIC ARTS (Printing)

Basic Skills

1. Define vocabulary related to graphic arts.
2. Explain the basic tools and processes of graphic arts (i.e., design, layout, paste-up, etc.).
3. Compare the basic kinds of image transfer (i.e., letterpress, duplication, screen, lithography).
4. Explain the materials in graphic arts and their use.
5. Explain common methods of binding.
6. Distinguish between the careers related to graphic arts.
7. Identify common hazards associated with graphic arts.
8. Discuss rules and procedures that will minimize dangers in graphic arts work.

Developmental Skills

1. Prepare an original layout.
2. Duplicate an original layout.
3. Use a common method of binding.

Extension Skills

1. Prepare and print a product using one of the following: letterpress, screen and lithography.
2. Prepare and print a multi-page product.
3. Discuss the technological impact of graphic arts on modern society.

PHOTOGRAPHY

Basic Skills

1. Identify and define the vocabulary related to photography.
2. Compare and contrast the basic types of cameras.
3. Explain the uses for the basic lab equipment.
4. Describe the basic photographic processes.
5. Explain the relationship of the basic parts of an adjustable camera.
6. Report on careers related to photography.
7. Identify common hazards associated with photography.
8. Discuss rules and procedures that will minimize dangers associated with photography.

Developmental Skills

1. Perform basic photographic processes.
2. Distinguish between good and poor photographic composition and exposure.
3. Process black and white film.

Extension Skills

1. Clean, load, aim, focus and adjust the controls of an adjustable camera.
2. Perform basic operations with an enlarger.
3. Explain the impact modern technology has on photography.
4. Explain the technological impact that photography has on modern society.

CONSTRUCTION

CONSTRUCTION MATERIALS

Basic Skills

1. Define related construction vocabulary.
2. Explain how basic construction materials relate to their application.
3. Demonstrate a basic knowledge of the career opportunities related to construction materials.
4. Identify common hazards related to construction materials.
5. Discuss rules and procedures that will minimize dangers in use of construction materials.

Developmental Skills

1. Explain the basic grading systems used in standard construction materials.
2. Recall the basic size classification of standard construction materials.
3. List the four components of concrete and explain the ratio used in mixing.

Extension Skills

1. Explain the impact that modern technology has on construction materials.
2. Relate the technological impact which modern construction materials have on society.

PRE-CONSTRUCTION PLANNING

Basic Skills

1. Identify vocabulary related to pre-construction planning.
2. Explain the factors to be considered in site selection and construction location.
3. Read and interpret construction blueprints and specifications.
4. Explain the need for basic components of a Bill of Materials.
5. Give examples of careers related to pre-construction planning.
6. Identify common hazards associated with pre-construction planning.
7. Discuss procedures that will minimize the dangers in pre-construction planning.

Developmental Skills

1. Discuss the necessary preparations for a given site selection.
2. Express the importance of building codes.
3. Explain the importance of blue prints and specification sheets.

Extension Skills

1. Design and sketch a small structure.
2. Develop a Bill of Materials from a given construction blueprint.
3. Relate the technological impact of pre-construction planning on modern society.

BUILDING STRUCTURES

Basic Skills

1. Define vocabulary related to building structures.
2. Apply the use of common tools and equipment to associated building structures and techniques.
3. Demonstrate safety related to building structures, tools and equipment.
4. Explain basic components of frame construction.
5. Describe careers connected to building structures.

Developmental Skills

1. Demonstrate proper and safe use of construction tools and equipment.
2. Construct component modules which may include wall sections, floors, doors, windows, trusses, traditional roof framing, foundations and bridges.

Extension Skills

1. Identify components of steel and concrete structures.
2. Fabricate a scale model of a student-designed structure.
3. Construct and stress-test a small structure.
4. Explain the impact which modern technology has on building structures.
5. Relate the technological impact which modern building structures have on our society.

MANUFACTURING

MATERIALS

Basic Skills

1. Define vocabulary words related to manufacturing materials.
2. Select raw materials necessary for manufacturing common products. These materials may include wood, metal, plastic, and ceramics.
3. Explain methods of processing raw materials.
4. Explain common measurements of raw and production materials.
5. Distinguish between career opportunities in the manufacturing field.
6. Identify common hazards related to manufacturing materials.
7. Discuss rules and procedures that will minimize dangers in manufacturing.

Developmental Skills

1. Distinguish between different classifications of materials.
2. Select a production material for a product.
3. Develop a flow chart for raw materials.

Extension Skills

1. Describe the relationship between raw materials and production materials.
2. Explain the impact which modern technology has had on manufacturing materials.
3. Relate the technological impact which modern materials have had on our society.

TOOLS AND PROCESSES

Basic Skills

1. Identify and define vocabulary related to manufacturing tools and processes.
2. Explain the different methods of separating, forming, machining, assembling and finishing materials.
3. Identify common hand and power tools used in production.
4. Define the mass production process.
5. Exhibit a basic knowledge of the career opportunities related to tools and processes used in manufacturing.
6. Identify common hazards related to manufacturing tools.
7. Discuss rules and procedures that will minimize dangers in using tools.

Developmental Skills

1. Describe the need for tooling in mass manufacturing.
2. Derive safety procedures for hand and power tools.

Extension Skills

1. Identify tools, materials and processes needed to mass produce a product.
2. Explain the impact which modern technology has on tools and processes of manufacturing.
3. Relate the technological impact which modern manufacturing tools and processes have had on our society.

PRODUCTION

Basic Skills

1. Identify and define vocabulary related to production manufacturing.
2. Demonstrate skills through a mass production project that includes management, production and marketing.
3. Describe the careers associated with production manufacturing.
4. Identify common hazards related to production manufacturing.
5. Discuss rules and procedures that will minimize the dangers associated with production manufacturing.

Developmental Skills

1. Make a product that includes separating, forming, machining, assembling and finishing.
2. Develop a marketing plan for a product.
3. Participate in the sale of a student-produced product.

Extension Skills

1. Design a management system necessary for constructing a manufactured product.
2. Develop a mass production product that includes all phases of manufacturing.
3. Explain the impact which modern technology has had on production manufacturing.
4. Explain the technological impact which production manufacturing has on our society.

TRANSPORTATION

ENERGY

Basic Skills

1. Identify and define vocabulary related to energy.
2. Compare the basic sources of energy.
3. Describe careers related to energy.
4. Identify common hazards associated with energy, and establish rules and procedures that will minimize dangers.

Developmental Skills

1. Trace the power flow of an energy source from production through consumption.
2. Identify the problems technology needs to solve concerning economics, ecology, and safety as they relate to energy.

Extension Skills

1. Distinguish between common methods of energy conservation, transmission and consumption.
2. Explain the impact which modern technology has had on energy sources.

POWER

Basic Skills

1. Identify and define basic vocabulary related to the transformation of energy.
2. Explain the components for developing, transmitting and controlling power.
3. Explain careers related to the transformation of energy.
4. Identify hazards common to energy transformation.
5. Discuss rules and procedures that will minimize the dangers in energy power transformation.

Developmental Skills

1. Identify common problems which technology needs to solve concerning economics, ecology and safety as they relate to energy and power conversion.
2. Demonstrate skills and techniques useful for general maintenance and repair of energy and power conversion devices.
3. Describe the function of a power conversion system.

Extension Skills

1. Develop a product that demonstrates energy sources, conversion, transmission and consumption of power.
2. Analyze the impact which modern technology has had on energy and power conversion.

SYSTEMS

Basic Skills

1. Identify and define vocabulary related to transportation.
2. Compare basic methods of transportation.
3. Explain basic propulsion systems.
4. Distinguish between the career opportunities associated with transportation.
5. Explain the hazards commonly associated with transportation.

Developmental Skills

1. Identify the problems technology needs to solve concerning economics, ecology, and safety as they relate to transportation.
2. Demonstrate skills and techniques useful for general maintenance and repair of transportation devices.

Extension Skills

1. Construct a model transportation device and demonstrate its use.
2. Develop a product that demonstrates energy sources, conversion, transmission and consumption of power.
3. Explain the impact which modern technology has on transportation systems and devices.